

## **CREEP DURABILITY OF 3D WOVEN SiC/SiC COMPOSITES WITH (CVI+PIP) HYBRID MATRIX**

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SiC/SiC composites are potential candidate materials for turbine components such as combustor liners, nozzle vanes and blades because of their low density, high temperature capability, and tailorable mechanical properties. The first generation of SiC/SiC composites fabricated by melt infiltration are being introduced in current engines. These materials are limited to 1315°C applications because of the presence of residual silicon in the SiC matrix. Currently there is an increasing interest in developing SiC/SiC composites without silicon for structural aerospace applications above 1315°C. The developmental 3D woven SiC/SiC composites with (CVI+PIP) hybrid matrix show potential for 1482°C applications. In this study 3D woven SiC/SiC composite specimens were creep tested at 1482°C at different stress levels until failure or for 1000hr without failure. The failed specimens were analyzed for under a scanning electron microscope to assess the damage mechanisms. The creep data of 3D woven SiC/SiC composites with (CVI+PIP) hybrid matrix were compared with those of full CVI SiC/SiC composites and sintered SiC from the literature. The potential benefits/limitations and durability of 3D woven SiC/SiC composites for turbine applications will be discussed